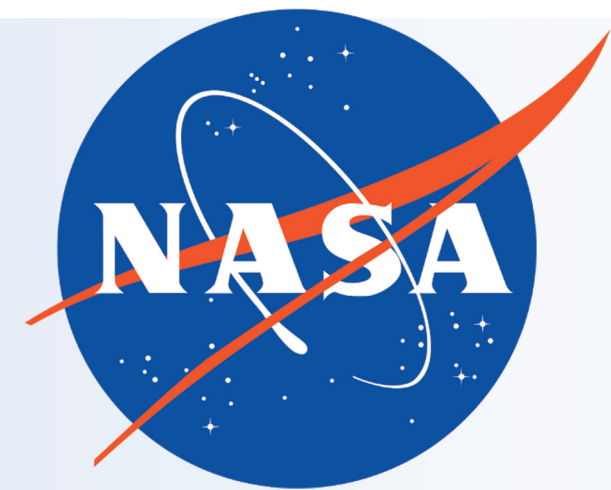


# A Field Guide to NASA's Life Sciences Data Repositories

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## Why This Field Guide?

This field guide explains the relationships among the types of NASA life sciences research data, and where these data can be found.

- There are two space life sciences programs within NASA:
  - The Human Research Program (HRP) funds research dedicated to developing tools and procedures that will protect humans during spaceflight.
  - The Space Biology Program (SB) investigates the effects of the spaceflight environment on living organisms, broadly defined.
- These programs generate several types of data:
  - Human
  - Animal
  - Plant
  - Microbial
  - Cell
  - Molecular Data
- Data products are housed within the repositories according to several characteristics:
  - Data Type
  - Funding Source
  - Data Sensitivity

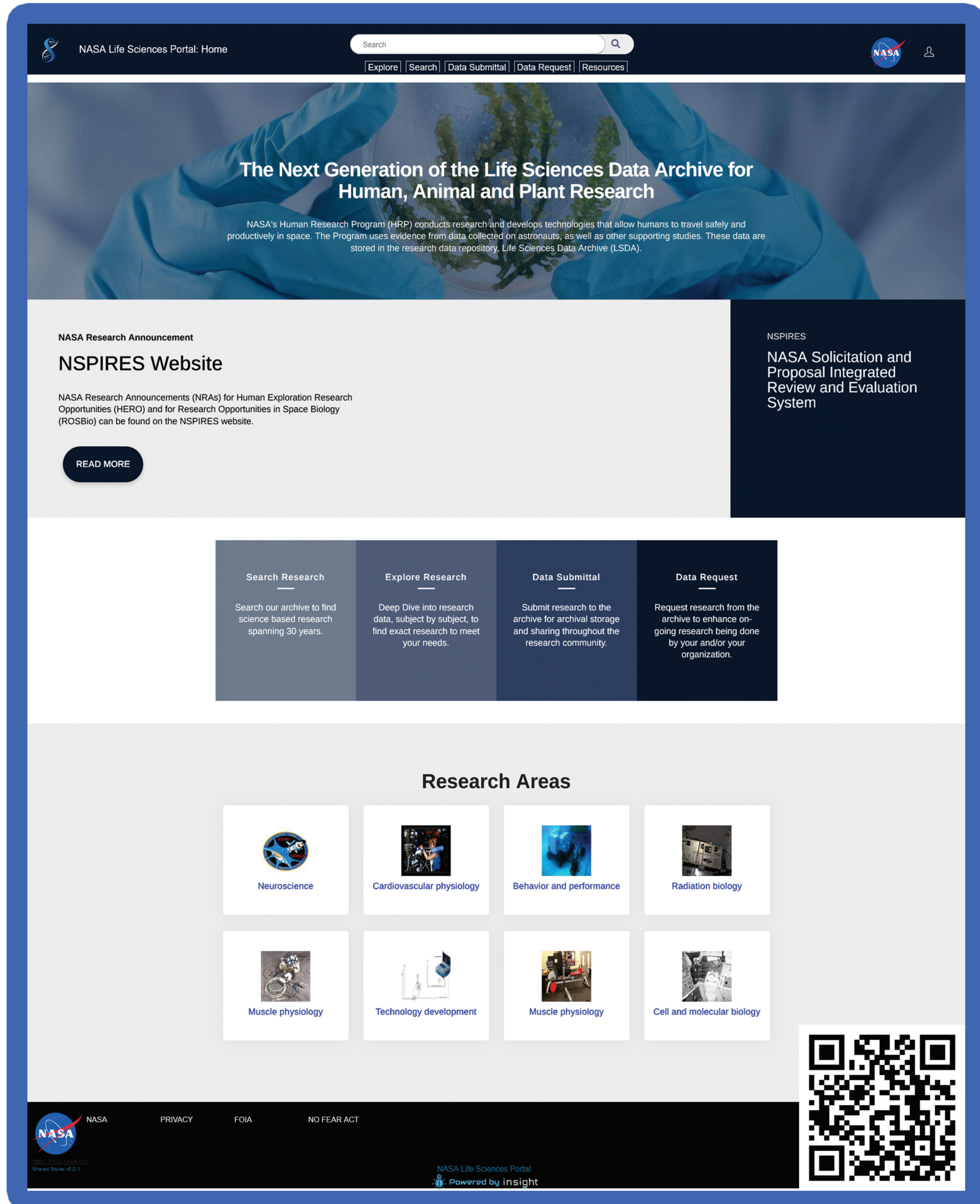
Each Repository curates the data and works to make it available for future research.

## Data Platforms

Two primary data platforms allow the public to access NASA research. The scope and accessibility of data differs between the two interfaces. Data stored in the Open Science Data Repository (OSDR) are primarily non-human data and more openly accessible (easy to remember, right?), whereas data in the NASA Life Sciences Portal (NLSP) are largely human data which require specific permissions to access. Future development plans will enable interoperability of the two platforms allowing researchers to use either tool to search all records in the federated life sciences repositories.



<https://osdr.nasa.gov/bio/>



<https://nlspace.nasa.gov/explore/lstdahome>

Within the NLSP Data Platform, LSDA and ALSDA archive data across over 30 different research areas, listed below.

### Research Areas

- Human/Non-human Biological Data
- Predominantly Human
- Non-Human Biological
- Abiotic & Technological

- Behavior and Performance
- Biomedical Countermeasures
- Cardiovascular Physiology
- Cell and Molecular Biology
- Chronobiology
- Clinical Medicine
- Developmental Biology
- Endocrinology
- Environmental Monitoring
- Exercise Physiology
- Extravehicular Activity
- Gastrointestinal Physiology
- Hematology
- Human Factors
- Hyper- and Hyobaric Physiology
- Immunology
- Life Support Systems
- Metabolism and Nutrition
- Microbiology
- Muscle Physiology
- Network Physiology
- Neuroscience
- Ocular Physiological Phenomena
- Omics
- Pharmacology
- Plant Biology
- Pulmonary Physiology
- Radiation Biology
- Renal, Fluid, and
- Electrolyte Physiology
- Skeletal Physiology
- Technology Development
- Toxicology

Once you start exploring the data platforms, these research areas can help you quickly find results that you might be interested in. The faceted search allows you to add more fields to further narrow your search.

## Meet the Repositories

Visit each repository site using the QR codes below.

NASA Life Sciences Portal

**Life Sciences Data Archive (LSDA)**  
<https://nlspace.nasa.gov/explore/lstdahome>  
Based at NASA's Johnson Space Center, the Life Sciences Data Archive (LSDA) is the primary data repository for human subjects science data resulting from Human Research Program (HRP) funded experiments. With datasets spanning the breadth of human space flight from Project Mercury to the International Space Station (ISS) along with data from spaceflight analogs, the archive is one of the most complete collections of human spaceflight data. LSDA contains both publicly available and privacy protected datasets. Investigators wishing to utilize privacy protected datasets can make a data request via the LSDA's website, the NASA Life Sciences Portal (NLSP).

**Ames Life Sciences Data Archive (ALSDA)**  
<https://osdr.nasa.gov/bio/about/alsda.html>  
The ALSDA is the official repository of non-human science data from both NASA Space Biology and HRP investigations. Data spans a broad range of biological levels involving data from tissues, organs, whole organism, physiology and behavior. ALSDA collections can be accessed through the Open Science Data Repository (OSDR) and NLSP.

**NASA Biological Institutional Scientific Collection (NBISC)**  
<https://osdr.nasa.gov/bio/about/nbisc.html>  
NBISC is a biorepository of non-human samples collected from NASA-funded spaceflight investigations and correlative ground studies. The purpose of NBISC is to receive, store, document, preserve, and make the collection available to the scientific community. The NBISC catalog is available on both the NLSP and OSDR data platforms. Investigators can apply for biospecimens via the data request portal on the NLSP website.

**GeneLab at Ames Research Center (ARC)**  
<https://genelab.nasa.gov>  
GeneLab is an open science multi-omics repository, covering transcriptomics, metagenomics, epigenomics, proteomics, and metabolomics. Studies comprise of data from model organisms including microbes, plants, fruit flies, rodents and humans. Scientists can upload, download, store, search, share, transfer, and analyze omics data from spaceflight and corresponding analogue experiments.

## Open Science Data Repository

The OSDR builds on the mission to maximize the utilization of the valuable biological research resources and enable new discoveries. Biological data archived by ALSDA and GeneLab are publicly available through the joint data repository.

### Where can I find animal biospecimens?

NBISC is a biorepository of non-human samples collected from NASA-funded spaceflight studies and correlative ground studies. Accessible via the NLSP and OSDR.

### Wait a second... the platforms overlap?

Yes! As a general rule of thumb, human data are curated and archived by LSDA and animal data by ALSDA. However, depending on managing NASA centers and programs, overlaps exist. Both the OSDR and NLSP interfaces are constructed to support cross-platform exchange of information. For example, if you find an interesting experiment record in the LSDA's collections that has data in GeneLab, you will see a link to the corresponding record in the OSDR.

### Astronaut Medical Data

The Lifetime Surveillance of Astronaut Health (LSAH) is a proactive occupational surveillance program for the astronaut corps which screens and monitors astronauts for occupationally-related injury or disease. LSAH is responsible for maintaining these data. Astronaut medical data from LSAH is available for research, with approval, via the data request portal on the NLSP website. Descriptions of the data are available on the LSDA's website at the URL below.

[https://nlspace.nasa.gov/explore/home/lstda\\_medical\\_operations](https://nlspace.nasa.gov/explore/home/lstda_medical_operations)



## NASA Life Sciences Portal

Human data archived with LSDA are often not publicly available due to privacy concerns. Although these data are protected, they may be accessed by filing a data request and with the help of an LSDA Archivist.

Non-proprietary, non-human data can be accessed readily through the NLSP. Some ALSDA data are also accessible using the NLSP. ALSDA data are open access in both NLSP and OSDR.

### Controlled Access

### Is everything in LSDA access-controlled?

No, some data are publicly available, depending on the type of data and other factors.

## Requesting Data

Researchers interested in accessing human research data, animal biospecimens, or animal, plant, or microbial data that is not open should submit a data request. The form to request data is available from the NASA Life Sciences Portal (NLSP) from the URL below or the QR code to the right:

<https://nlspace.nasa.gov/explore/lstdahome/datarequest>



Do not forget, you can also ask an archivist for assistance in identifying relevant data.